Commonwealth of Kentucky
Division for Air Quality

EXECUTIVE SUMMARY

FINAL
Title V / Synthetic Minor, Operating
Permit: V-07-024 R1
Constellation Spirits Inc.
Bardstown, KY 40004
October 3, 2008
Lisa Beckham, Reviewer

SOURCE ID:	21-179-00020
AGENCY INTEREST:	3247
ACTIVITY:	APE20080002

SOURCE DESCRIPTION:

Constellation Spirits Inc. operates a distillery in Nelson County, Kentucky, where whiskey and bourbon are produced from grains through fermentation and distillation. Grain that has been milled is fed into mash cookers along with water where the grain starches are converted to sugars by heating. The cooked grain/water mixture is fed into fermenter vessels as a batch operation to convert the sugars to ethanol. After an appropriate residence time, the mixture is processed through distillation columns and condensers to separate the ethanol from the mixture. The condensed liquid is put into barrels to be aged. After the appropriate age is reached the bourbon or whiskey is dumped from the barrels, processed and bottled for shipping.

On April 16, 2008 Constellation Spirits submitted an application for a significant revision to their Title V permit, V-07-024. Supplemental information was received on May 8, 2008 and June 10, 2008, respectively. On June 5, 2008 Constellation Spirits submitted an application for an administrative name change from Barton Brands, LTD to Constellation Spirits Inc. The name change has been incorporated into this permit revision.

In this revision, Constellation Spirits has proposed replacing the 15,000 ton per year limit on coal usage with a limit on the chlorine content of coal. The limit on coal usage was set based on the AP-42 emission factor for hydrogen chloride to preclude applicability of CAA Section 112(j). In October 2007 Constellation Spirits conducted stack testing on Emission Unit 09 (99.5 MMBtu/hr coal-fired boiler) to determine emissions of hydrogen chloride and particulate matter. The facility controls hydrogen chloride by injecting limestone into the combustion gases prior to entering the baghouse for Emission Unit 09. During the stack test, the hydrogen chloride emissions were determined at varying limestone feed rates (0 to 180 lb/hr). These results were then used to develop the polynomial equation below to estimate the control efficiency of hydrogen chloride, where x = the limestone feed rate:

$$\textit{Control Efficiency} = -2\times10^{-5}x^3 + 0.0058x^2 + 0.0331x + 30.963 \quad (R^2 = 0.9984)$$

The maximum chlorine content is set at 2,956 ppm (110% of the average chlorine content used during testing) and will be based on the monthly average chlorine content of coal burned. Constellation Spirits will use this equation, the chloride content of the coal and the limestone feed rate to determine monthly hydrogen chloride emissions. Since the stack tests were conducted at or

near the maximum heat input of the boiler, Constellation Spirits considers this method to be a conservative approach to estimating emissions, since the polynomial equation used does not take into account the heat input of the boiler. The 9.0 ton per year limit on hydrogen chloride emissions remains unchanged and the facility shall maintain a log of the twelve-month rolling total for review by the Division. All 502(b)10/off permit changes have also been incorporated into this permit revision.

With this final permit the Division corrected a typographical error in the equation that estimates the control efficiency of hydrogen chloride. The third term was correct from "– 0.0331*x*" to "+ 0.0331*x*".

U.S. EPA REVIEW:

The U.S. EPA was notified of the issuance of the proposed permit on August 19, 2008 via e-mail. The comment period expired 45 days from the date of e-mail. No comments were received during this period. The permit is now being issued final.